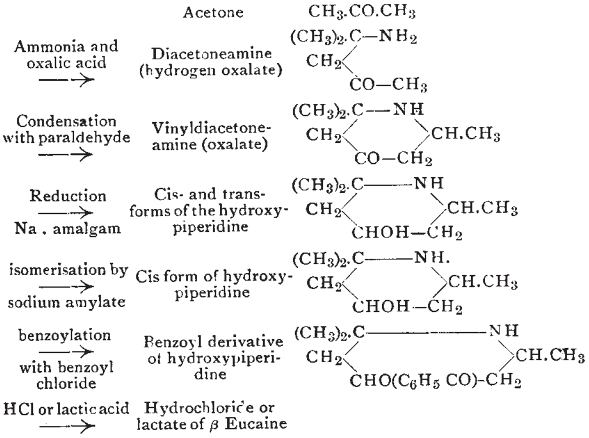
of this drug is a comparatively simple matter, involving the treatment of a solution of formaldehyde with ammonia. It is understood that the compound is now being prepared in considerable quantities in this country.

β-EUCAINE, which is an important local anæsthetic, has not been prepared in England hitherto, and there is apparently very great difficulty in obtaining any of it for medicinal use. The preparation of the drug is a long and tedious process, and many initial difficulties had to be overcome before the correct conditions were found. Ultimately the following general scheme was worked out, and found to give satisfactory results:—



It should be added that the cost of the materials used in these preparations was defrayed by the Imperial College, and that the services of the workers were given gratis.

J. F. THORPE.

NOTES.

AT the anniversary meeting of the Royal Astronomical Society, to be held on February 12, the question of the admission of women will again be brought forward; and it will be proposed that the council take all necessary steps to render their election possible. Whatever arguments may, from selfish motives, be used against the admission of women to membership of professional corporations, no logical reason can be found for excluding women from societies which exist purely for the advancement of scientific knowledge. In astronomy women have shown aptitude for observation and exceptional powers of description. So long ago as 1828 the Royal Astronomical Society awarded its gold medal to Caroline Herschel for the help she had given her brother (her work as an original discoverer was overlooked at that time); and the society has already two lady honorary members, namely, Lady Huggins, elected in 1903, and Miss A. J. Cannon, of Harvard College Observatory, elected last year. Other well-known names of women who have done notable work for astronomy are Mrs. Somerville, Mrs. Roberts (Mdme. Klumpke), Miss Agnes M. Clerke, Mrs. Maunder, and Mdme. E. Chandon (Paris Observatory). Women have for some time attended meetings of the Royal Astronomical Society by invitation of the council; and the society should now take the further step of converting the favour to a right. Among the scientific societies in which this equality of sexes exists already are the Royal Anthropological Institute, British Astronomical Association, Institute of Chemistry, Entomological Society, Geologists' Association, Linnean Society, London Mathematical Society, Royal Meteorological Society, Royal Microscopical Society, Physical Society, Röntgen Society, Royal Geographical Society, Royal Society of Arts, Royal Statistical Society, and the Zoological Society. The Royal Astronomical Society will thus be in good company if it decides that the time has come for the removal of the barriers by which women have been denied the privilege of being proposed for fellowship on equal terms with men.

DR. J. A. MURRAY has been appointed acting director of the Imperial Cancer Research Fund.

LORD FISHER OF KILVERSTONE and Vice-Admiral Sir Edmond J. W. Slade have been elected honorary members of the Institution of Petroleum Technologists.

IT is with much regret that we have to announce the death on Saturday, January 23, after a brief illness, of Mr. F. W. Rudler, for many years curator of the Museum of Practical Geology at Jermyn Street.

IT is announced in the issue of *Science* for January 15 that the Rockefeller Institute for Medical Research will receive 40,000*l.* under the will of the late Mr. Henry Rutherford, for cancer research work.

PROF. ARTHUR KEITH has been granted leave of absence for six weeks by the Royal College of Surgeons for the purpose of delivering a course of five lectures on anthropology at the Western Research University, Cleveland, Ohio.

THE anniversary of the birth of Sir Francis Galton, Tuesday, February 16, will be celebrated as usual by a dinner and lecture. This year Prof. J. Arthur Thomson has undertaken to deliver an address dealing with some aspects of war and eugenics.

THE annual meetings of the Institution of Naval Architects will be held on Wednesday, March 24, and the following day, in the hall of the Royal Society of Arts, John Street, Adelphi, W.C. The Marquis of Bristol, R.N., president, will occupy the chair.

WE learn with regret through a message received from the council of the Imperial Society of Naturalists, Moscow, of the death, at sixty-eight years of age, of Dr. Nicolas Oumoff, president of the society, and professor of physics in the Imperial University of Moscow.

THE gold medal of the Royal Astronomical Society has been awarded by the council to Prof. A. Fowler for his spectroscopic investigations of sun-spots, stars, and comets, and for his successful interpretation of cosmic phenomena by means of experiments in the laboratory. The presentation of the medal will be made at the annual general meeting of the society on February 12.

DR. TOKUTARO ITO, of Tokyo, has written to Lady Hooker to inform her that her distinguished husband —the late Sir Joseph Dalton Hooker—"has been recently selected by the contemporaries in Japan, as one of the twenty-nine heroes of the world that modern time has produced." We wrote to Dr. Ito a few weeks ago to ask for a copy of the complete list of men thus selected, and hope to be able to give the names before long.

THE Second Indian Science Congress, organised by the Asiatic Society of Bengal, was held at the Presidency College, Madras, on January 14–16, under the presidency of Surgeon-General W. B. Bannerman. The sections of the Congress, and their chairmen, were as follows:—Agriculture and applied science, Dr. H. H. Mann; physics, Mr. C. V. Raman; chemistry, Prof. P. C. Ray; zoology, Dr. N. Annandale; botany, Dr. C. A. Barber; ethnography, Mr. H. V. Nanjundayya; geology, Dr. W. F. Smeeth.

THE Institute of Industry and Commerce informs us that a committee representing chemical manufacturers and scientific societies has been decided upon and that a meeting of all concerned has been convened and will meet this week, at the offices of the institute, Exhibition Buildings, Aldwych Site, Strand, W.C., to consider the present situation. Chemical manufacturers who are interested can obtain permission to attend the meeting by making application to the secretary at the above address.

THE rumoured death on the field of battle of Robert Douvillé is confirmed by a note in the *Revue critique de Paléozoologie* just received. The young *chef des travaux* at the Ecole des Mines had published a series of valuable studies on ammonites, of particular interest from his attempt to explain their phenomena of descent with modification on the principles of advanced biological theory. His colleagues in this country will feel much sympathy with his distinguished father, Prof. Henri Douvillé, and will lament a great loss to the science of palæontology.

AT the annual general meeting of the Royal Meteorological Society, held on January 20, the council, in its report, referred to the various investigations and work carried on by the society, including the researches in the upper atmosphere, the collection and discussion of phonological observations, the arrangements for the preparation of a climatological atlas of the British Isles, and the delivery of popular lectures on meteorology. Capt. H. G. Lyons was elected president, and Mr. F. Campbell Bayard and Commander W. F. Caborne secretaries, for the ensuing year. The new members of council are:—Mr. J. S. Dines, Mr. A. P. Jenkin, and Sir J. W. Moore.

A MEETING of the General Organising Committee for the International Botanical Congress, which had been arranged to be held in London next May, took place at the Linnean Society's rooms on Thursday last, January 21. A report was given of the work of preparation which had already been carried out by the executive committee, and the members were asked to consider the present position. The two following resolutions were carried:—(1) That the congress be not held in 1915; (2) that the present executive committee continue to act so long as necessary. The committee was strongly of opinion that a meeting of the congress in London should not be abandoned, and the suggestion was made that it might take place at the next quinquennium, in 1920. But it was agreed that nothing definite could be settled at the present time, and the following resolution was passed:—"That the executive committee be authorised to convoke a meeting of the general committee at some future date to consider the date of the congress." It was also decided that in the meantime the general committee be called together once a year.

FROM a letter received by Messrs. L. and H. Hagenbeck, of Hamburg, from Dr. Bultikofer, director of the Rotterdam Zoological Garden, and published in *Science* of January 15, we learn the following news relating to the Antwerp Zoological Garden:—All the bears in the garden were shot prior to the bombardment. The large feline carnivora were put into strong transportation cages and removed to the rear of the garden, also prior to the bombardment, while the small felinæ were transferred to cages in the cellars of the Festival Building. A few days before the surrender of the city, when the heavy cannonading started fires in all parts of the city, which could no longer be put out in consequence of lack of water, the large carnivora were likewise shot by resolution of the board of directors, but contrary to the director's advice. None of the other animals were killed, with the exception of a few venomous snakes. During the bombardment only one shell dropped into the garden, striking the ground in the open space for the turtles, where it fortunately did no material damage.

THE new building on Tower Hill of the Institute of Marine Engineers is illustrated in *Engineering* for January 22, and was inaugurated by the president of the year, Sir Archibald Denny, on Wednesday last week. The president urged that the institute should take up as a study how information might best be gathered and transmitted to the designers, and emphasised that such information should be as accurate as possible in order to be of service. So convinced is Sir Archibald of the value of short memoirs on sea experience that he has put at the disposal of the council a sum of money, the interest on which will enable it to distribute prizes for the best memoirs each year. The membership of the institute is now nearly 1500, and the new building includes a spacious lecture-room, library, reading-room, various social rooms, and the usual offices. The institute has done good work in the past in the way of bringing marine engineers together for the interchanging of experiences, and on the lines suggested by Sir Archibald Denny should be capable of extending its usefulness greatly.

IN July, 1912, a Russian expedition, under Lieut. G. Brussilov, left Petrograd for the Arctic. It was intended to winter in the Katanga or some other Siberian river, and then to complete the north-east passage (which, it is curious to recall, was yet to be accomplished by a Russian expedition), carrying out geographical and ethnological research. Another expedition, under Rusanov, started for these seas in the same year, and anxiety has been felt about both, in the absence of any news save rumours of a wreck at the mouth of the River Pechora. Captain Sverdrup was therefore dispatched in command of a relief expedition on the *Eclipse*, and it was reported last September that he himself was in difficulties, the ship being ashore near the mouth of the Ob. He was fortunately encountered by another vessel, and the *Eclipse* was towed off and proceeded. It is now announced, in messages from Petrograd, that she is in winter quarters in lat. 74° 45′ N., long. 92° E. On existing maps this position falls well inland in the Taimyr Peninsula, so that it may perhaps be assumed that she has found a berth in a bay on this coast. It does not appear that the search has yet succeeded.

SOME interesting particulars of the life of Dr. J. Muir, the widely known naturalist, whose death was announced in NATURE of December 31, are given in the *Scientific American*. John Muir was born in Dunbar, Scotland, April 21, 1838, and went to the United States when 11 years old with his parents, who settled in the wilderness of Wisconsin, where later he studied in the University of Wisconsin. His love of nature induced him to take up a wandering life, during which he covered much of the territory of the South-west and West, constantly increasing his knowledge of natural history, as well as allied sciences. About 1876 he joined the United States Coast and Geodetic Survey to enable him to extend the field of observations, and covered great sections of Alaska. The great Muir Glacier bears his name. He was one of the party that went in search of De Long and the lost *Jeanette* expedition, and also of the Corwin expedition, during which he had an opportunity to study the Glacier formation of the Bering Sea, and the coast of Siberia, and later went to Switzerland and Norway for purposes of comparison. Besides being a naturalist he was an able geologist, explorer, artist, and philosopher, and in his younger years showed that he was a clever inventor. He was widely known as the "Guardian of the Yosemite" and the "Naturalist of the Sierras" from his intense interest in those regions, and he did much for the preservation of the national forests and parks.

MR. T. F. BURTON has succeeded Mr. Watson Smith as editor of the Journal of the Society of Chemical Industry, and the first issue of the journal under his editorship is before us. No other journal can have so great an influence upon the chemical industry of the United Kingdom as that issued fortnightly by the Society of Chemical Industry; and at the present time, when a new editor is commencing his responsibilities, it is appropriate to point out that chemists will never again have so favourable an opportunity of asserting their influence on industry and gaining a greater hold in this country than during the next twelve months. The technical abstracts in the journal are very valuable, but perhaps the more purely scientific notes might be left to the Chemical Society. The space saved could be devoted to more general and commercial chemical topics, and so justify the journal as the organ of an industrial organisation. Though the papers communicated by members are not usually of a high standard, owing to some extent to the enforced secrecy about chemical processes, the current issue contains a contribution of striking merit by Mr. E. V. Evans, describing the solution of the all-important problem of the removal of carbon bisulphide from coal gas. More might be done, as indeed was attempted a few years ago, to publish summaries on the development or present position of certain selected branches of chemical industry. The opportunity to-day is a great one; it rests largely with the society whether the industrial chemists of the kingdom are to organise collectively to seize it, or whether action is to be left to the more progressive individual firms.

AT the end of last year Mrs. James Buckland sent us a letter which apparently had been issued to other periodicals at the same time, referring to the feather trade. In the course of this appeal to women to begin the new year with a resolve to abstain from the use of feathers in their millinery, the remark was made:—"The bulk of the plumage which comes into the London market—smuggled out of India and our Colonies for the most part—goes in a raw state to Germany, whence it is returned to this country made into hat decorations." As similar assertions relating to the importation of birds' plumage from India to Germany are often made, we have gone to the trouble of instituting inquiries with the view of obtaining accurate information upon this subject. We have been unable to find any particulars either in the official trade returns of Germany or of India as to the trade between these countries in birds' feathers. An examination of the German returns also shows that the imports of feathers into that country from the other British possessions are quite insignificant. The bulk of plumage of all descriptions, including ostrich feathers, comes into the London market, and the dyeing and mounting of these are done chiefly here and in France. This is the case with all high-class goods, but cheap articles of fancy feathers, wings, and mounts, have been bought here in the rough, sent to Germany, and then returned to us. There seems to be little justification for the statement that the bulk of the plumage in its raw state goes to Germany and is returned made into hat decorations, although some of it, exported from here, does find its way back again. Perhaps Mrs. Buckland, or someone else interested in the preservation of beautiful birds will furnish us with the definite information upon which the charge is based that the plumage trade is largely dependent upon the supply of birds' feathers to Germany from India and our Colonies. Unless such evidence is forthcoming we are of the opinion that by the publication of statements which do not admit of complete justification by fact, advocates of better protection of birds let their zeal outrun their discretion.

MR. A. SMITH, curator of the City and County Museum at Lincoln, has issued at the price of one penny a useful catalogue of the collection of implements of the Stone age. From Lincolnshire only one Palæolithic implement, now in the British Museum, is recorded, but the local museum possesses a good collection of Neolithic implements discovered in the county. Most of these are the gift of the Rev. Canon A. Rowe, augmented by a series recently presented by the authorities of the British Museum.

THE December issue of the *National Geographic Magazine is* devoted to the Nearer East. The most important contribution is that by Frederick and Margaret Simpich, under the title "Where Adam and Eve Lived," in which the scenery, city, and rural life of Bagdad and its neighbourhood are described and illustrated by a collection of admirable photographs. Mr. Simpich, in a second article, describes an adventurous trip to the little-known Nedjeb, "the Shia Mecca," where the fanaticism of the people is readily excited against Christian visitors. The writer had a narrow escape from attack when he attempted to examine the Abbas Mosque, the inner glories of which no Christian has ever seen.

THE report of the Bristol Museum and Art Gallery for 1914 is a record of steady progress, but the death of Lady Smith, of Ashton Court, deprived it of one of its most generous benefactors. During the year the director accompanied the British Association to Australia and procured a good collection of corals and marine invertebrata from the Great Barrier Reef. The great Watkins collection of Gloucestershire insects, including some 13,000 specimens, has been remounted and classified, and the other collections have been widely extended. The museum is largely used by students, and the authorities have made an important new departure by deciding that research work upon the museum collections or in the field shall in future be a definite part of the duties of the museum assistants.

WE have to acknowledge the receipt of the *Aarsberetning* of the Norske Meteorologiske Institut for the financial year ending June 30, 1914. The records of 507 stations are included, some of which, however, contain much fuller statistics than others.

IN No. 4 of vol. ii. of the *Children's Museum News* reference is made to a special case of the influence of the museum on the mind and pursuits of a boy, and thus of his whole future career. Although his family were all engaged in business occupations, he became deeply interested in wireless telegraphy, and now, after a special course of instruction, hopes to graduate in electrical engineering. "What the Children's Museum has done for this boy is typical of what it is constantly doing in a greater or less degree for other children." The number of visitors in October last was 4729—an increase of 1033 over the corresponding month of the preceding year—and in November 4864.

THE Board of Agriculture and Fisheries has issued a compendium of regulations for the show of thoroughbred stallions, suitable as sires for half-bred horses, to be held at the Royal Agricultural Hall, Islington, on March 2 and 3. The show is in connection with the Hunters' Improvement and National Light Horse Breeding Society. A cup for the champion stallion, to which a King's premium has been awarded, to be selected from those recommended for super-premiums, has been graciously offered by H.M. the King. It will be tenable for one year only; but a gold medal will also be awarded by the Board to the owner of the winning stallion. Fifty King's premiums, averaging a little more than 300*l.* each, are offered to owners who arrange for thoroughbred stallions to travel in prescribed districts. In addition, super-premiums, not exceeding a dozen in number, of the value of 100*l.*, will be given for stallions of exceptional merit.

THE Earl of Cromer presided at the monthly general meeting of the Zoological Society, held on January 20, when the Council reported that 52 additions were made to the menagerie in December, of which 27 were presented, 18 received on deposit, and 3 in exchange, and 4 born in the Gardens. Among the more notable of these are a dwarf mongoose (*Helogale undulata*) from the Tana district of British East Africa, deposited; a golden-eared honey-eater (*Ptilotis chrysotis*) from Papua, presented by Mr. A. Ezra, and a pair of red-crowned fruit-pigeons (*Alectroenas pulcherrima*) from the Seychelles, received in exchange; the first and second of these being the first representatives of their kind received at the Gardens. The number of visitors to the Gardens in December was 17,279, a decrease of 12,541 as compared with the corresponding month of 1913. The total number of visitors in 1914 was 1,055,208, or 102,766 fewer than in the previous year; the total gate-money amounted to 24,666*l.*, or 3557*l.* less than in 1913. The total number of additions to the list of Fellows was 305, or 59 fewer than in 1913, and 7 below the annual average for the last decade. Auditors were appointed to go through the Society's accounts for the past year on February 24 next.

AN important economic application of ecology is suggested by Prof. F. W. Oliver and Dr. E. J. Salisbury in a study of vegetation and mobile ground, as illustrated by the shrubby sea-blite (*Suaeda fruticosa*), reprinted from the *Journal of Ecology*, vol. i., No. 4. The authors give the results of their detailed and continuous observations on the distribution and manner of growth of this plant on the shingle beach at Blakeney Point, Norfolk, showing that where conditions permit its establishment on the lee edge of a beach it will, as the beach slowly travels over it, respond by continually growing to the surface, hence the plant disposes itself in longitudinal belts on the beach corresponding in establishment to periods of dormancy of the beach. By its great capacity for rejuvenescence and power of arresting the travel of shingle, and thus raising the height of a beach, Suæda would appear to be pre-eminently adapted for planting on shingle spits and similar formations with the object of arresting landward travel. The authors point out that as knowledge accrues of the detailed mechanism of accretion due to the establishment of plants on blown sand, tidal flats and shingle beaches, it will become possible to exert some degree of control over the form and distribution of the resulting topographical features, and they look forward to the time when, as an outcome of detailed vegetation studies of the kind here presented, the art of moulding the plastic coast line will develop into a recognised craft.

THE rainfall of 1914 is dealt with in *Symons's Meteorological Magazine* for January, and rather more fully in the *Times* of January 19, by Dr. H. R. Mill, Director of the British Rainfall Association. The results are given in anticipation of the more copious discussion which will appear some months hence. Of 5500 records some 3500 have been already received, and a representative selection of the stations has been used. The months of February, March, November, and December were wet, and of these February was the wettest in Ireland, and December in Great Britain. The rainfall of December is said to have been exceptional in all parts of the Kingdom, and especially so in the South of England. From April to October the rainfall was in general well below the average, and it is surmised that the dryness of this period was about as abnormal as was the great rainfall of December. In England and Wales the rainfall for the year was 106 per cent. of the average, in Scotland 102 per cent., in Ireland 106 per cent., and for the whole of the British Islands 105 per cent. The records of 57 years at Camden Square and 41 years at Slough show that no other December has yielded so large a rainfall, and it is suggested that it was not only the wettest December, but probably the wettest month on record for the southern counties. At Camden Square the rainfall for December was 25 per cent. of the annual fall for 1914. The map giving the December rains for the Thames Valley shows extensive areas with the measurement of 10 inches, whilst in the neighbourhood of Hindhead the rainfall for the month was 12 inches.

THE recent increase of the number of 10-candle-power pentane lamps sent to the Bureau of Standards to be tested, has led to a detailed examination of the conditions under which such lamps should be operated in America to give the most accurate results. A memoir on the subject by Messrs. E. C. Crittenden and A. H. Taylor appears in part 3 of vol. x. of the Bulletin of the bureau. It deals with the preparation and testing of the pentane, the ventilation of the photometer room, and the preparation and operation of the lamp, and shows how the candle-power of the lamp is affected by the pressure, temperature, and humidity of the air of the photometer room. In general the directions for use of the lamp are in agreement with those issued by the Metropolitan gas referees of London, but in some of the details the two differ owing partly to the greater humidity of the American atmosphere.

UNDER the auspices of the University of Tokio the hot and mineral springs of Japan are being tested for radio-activity, and reports by Messrs. S. Ono and H. Ikewti, on the springs of four districts appear in the Proceedings of the Tokio Mathematico-Physical Society for November, 1914. The measurements were made by the bubbling method, and give for the hot springs in the south of the province Higo values between 1·4 and $0{\cdot}3 \times 10^{-12}$ curie of radium emanation per c.c. of water, for the cold springs of the province Etigo the figures are 0·3 to 0·1 at Matunoyama, and 17·3 to 14·8 at Murasugi, and for those in the north-east of Sinano 0·16 to zero. In comparing these figures with 2×10^{-12} gram of radium which forms the average content of a gram of rock, it is to be noted that the curie is the amount of emanation in equilibrium with a gram of radium, and at normal temperature and pressure occupies 0·60 cubic millimetre.

AN important paper was read by Mr. E. Kilburn Scott before the Society of Chemical Industry on January 4 on a new electric furnace for the production of nitrates from the atmosphere. The author emphasised the immense importance, in view of the war, of manufacturing nitrates from the air by electric power, and described a new three-phase furnace which, it was claimed, has substantial advantages over the existing single-phase furnaces now in use on the Continent. Briefly, the new type of furnace consists of three electrodes, spaced 120° apart, consisting of ½-in. steel rods, bent at about 30° from the vertical. The top of the furnace, through which air is circulated, is a boiler with vertical copper tubes for the gases to pass through. The advantage of this system is that with a given periodicity of supply thrice as many arcs are formed in a given time as would be the case with single-phase. The three phases give a combined flame of conical shape which is hotter than if the same energy were expended in three separate furnaces, because the latter have only a single flat flame and the losses by radiation are much greater. The efficiency per unit cost of plant is much increased by the arrangement described, and the heat energy can be largely recovered by using the steam produced in the boiler to generate electricity, the combination thus working regeneratively. Owing to the increased temperature the yield of oxides of nitrogen, too, is largely raised under the new system of working. Since the Notodden factory was started the percentage concentration of nitric oxide has been doubled merely by making small modifications in furnace construction and in the rate of supply of air, but it is still under 20 per cent. The fact that it is so much lower than the value theoretically possible indicates that great improvements are still possible in the working details of the process.

ATTENTION was directed by French surgeons some time ago to the unusually high proportion of the French wounded suffering from tetanus, gangrene, and other forms of blood poisoning. In the *Comptes rendus* of the Paris Academy of Sciences for January 11 is a paper by M. Victor Henri which throws some light on the cause of this. From the results of the examination of a number of unexploded German shells, M. G. Urbain has been able to prove the presence of phosphorus. Common shell of 77 calibre and shrapnel shell mostly contain a large quantity of a violet-brown powder, smelling strongly of white phosphorus, and 97 per cent. of which consists of various kinds of phosphorus, the red variety predominating. In the common shell the phosphorus is contained in a cylindrical box, diameter 25 millimetres and height 60 millimetres, placed in a cavity behind the explosive. In the shrapnel shell, the bullets are placed in a cylindrical white metal box 65 millimetres diameter, and the space between the bullets is filled with the same violet-brown powder. The whole is rammed tight, so that the bullets, which are roughened, retain a certain quantity of the phosphorus. As a result, pieces of German shells and shrapnel bullets carry more or less phosphorus into a wound. This fact should be specially brought to the notice of surgeons, since phosphorus can produce a mortification of the tissues even with a shrapnel bullet, and micro-organisms, especially the anaerobic organisms, which produce tetanus and gas gangrene, find a favourable medium for their development and the wound may become grave. It is therefore advised that wounds produced by shrapnel and fragments of shell should be deeply incised and cleaned with the greatest care.

MESSRS. LONGMANS, GREEN AND CO. announce that from February 1 the complete list of publications of the Manchester University Press will be published by them throughout the world.

OUR ASTRONOMICAL COLUMN.

ANNUAL REPORT OF THE U.S. NAVAL OBSERVATORY.—The report, for the year 1914, of the superintendent of the U.S. Naval Observatory, is presented as Appendix No. 2 in the Annual Report of the Chief of the Bureau of Navigation, 1914. While the report itself only covers twenty pages, the contents are very concentrated, and cover a very large field of activity. The superintendent refers briefly to the distribution of time, the issue of the American Ephemeris and Nautical Almanac, the observations of sun, moon, planets, satellites, comets etc. Each of these subjects is more fully described in the subsequent paragraphs under the various sub-headings. Regarding the longitude determination between Washington and Paris by wireless signals, it is stated that the reduction of the observations is well advanced, and this will constitute the first direct determination between the Naval Observatory and Europe. Ten American observatories took advantage of the opportunity of using these signals and made the necessary observations to determine their longitudes.

THE APPLEY BRIDGE AEROLITE.—A description of the Appley Bridge meteorite (see NATURE, November 5, 1914, and January 7) sent to the Royal Astronomical Society by Messrs. W. C. Jenkins (Godlee Observatory) and E. C. Rhead, appears in the Monthly Notices of the Society for December, 1914. Of the recorded falls in Great Britain that of Wold Cottage is the only one of greater weight than the present one. Ultimate analysis showed silica, magnesia, iron, and alumina were the principal constituents; small quantities of sulphur, nickel, and phosphorus were found. Chlorine, sodium, potassium, calcium, strontium, and antimony were detected and lead was suspected. It is stated that a careful—chemical—search for titanium gave negative results. The question arises, was chromium specially looked for?

ANNUAIRE DU BUREAU DES LONGITUDES, 1915.—We have received a copy of this very useful publication, issued by the Bureau des Longitudes, Paris. The table of contents is, of course, parallel with that of the volume for 1913, that is to say, in addition to minor changes in the first section, the second section is made up of geographical and statistical tables, etc., in place of the chemical and physical data given last year. There is a noteworthy addition in the shape of a description of the constellations from the pen of M. G. Bigourdan, containing a list giving details of more than 400 of the brighter stars in 88 constellations. The usefulness of the list might have been increased by the addition of a column containing type of spectrum. A valuable essay (162 pages) by the same able author on the methods of testing mirrors and objectives forms the final section.

THE THEORY OF A SUNSPOT SWARM OF METEORS.—Prof. R. A. Sampson (Monthly Notices, Royal Astronomical Society, December, 1914) discusses some points in the theory that sunspots are produced by a bombardment of the sun by meteors of the Leonid swarm detached by encounter with Saturn. Two objections are advanced: first, that the conditions required by the hypothesis would require an improbable mass for the Leonids, and, secondly, that the orbit of the Leonids does not allow the required encounter of the swarm with Saturn. What is probably the more interesting outcome of Prof. Sampson's investigation is the deduction of a new date for the capture of the Leonids. It is shown that there are three dates, all more recent than Leverrier's (A.D. 126), in which the critical conditions for capture obtained; one of these, A.D. 885, comes a little before the earliest recorded shower (A.D. 902), and accordingly is considered the more probable date.

THE RESTORATION OF AN ICHTHYOSAUR.

SOME three-quarters of a century ago the late Sir Richard Owen directed attention to the very frequent occurrence in the flattened skeletons of ichthyosaurs from the Lias of Whitby and Lyme Regis of a sudden flexure in the vertebræ of the tail at a distance from the tip of about one-fourth the total length. This flexure, he argued, must have been due to the presence of a terminal tail-fin, placed vertically, like that of a fish, although not fish-like in structure. The truth of this has been made apparent, not only by the impression of the soft parts in some of the ichthyosaurs from the Lias of Holzmaden, but likewise by the skeletons of their successors disinterred by the Messrs. Leeds from the Oxford Clay near Peterborough, all the latter exhibiting a structural modification at the point in question. Of these wonderful Oxfordian skeletons a reconstructed example, of which we are enabled to give a figure, has recently been set up in the fossil reptile gallery in the Natural History branch of the British Museum, and is believed to be the first entire articulated specimen placed on exhibition. It belongs to the big-eyed, broad-paddled, and practically edentulous group constituting the genus Ophthalmosaurus, of which it represents the species known as *O. icenicus*. As mounted, it measures a little more than 13 ft. in total length, and carries about fifty pairs of ribs, of which the first half-dozen or so are crowded together in order to enable them to underlie the scapulæ.

The work of fitting together and mounting the *disjecta membra* of this skeleton was one which called into play all the skill of the articulators of the geological department, to whom great credit is due for the accomplishment of such a difficult task.

A point of special interest in connection with these